



# Statistiques des précipitations extrêmes des communes belges

Fosses-la-Ville (INS 92048)

1. Niveau de retour estimé pour une durée de précipitations de 10 minutes à 30 jours (lignes) et une période de retour de 2 à 200 années (colonnes). Unités : mm.

| Durée  | Période de retour (années) |       |       |       |       |       |       |       |       |       |       |       |
|--------|----------------------------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|
|        | 2                          | 5     | 10    | 15    | 20    | 25    | 30    | 40    | 50    | 75    | 100   | 200   |
| 10 min | 7.7                        | 11.1  | 13.6  | 15.1  | 16.2  | 17.1  | 17.9  | 19.1  | 20.1  | 21.9  | 23.3  | 26.8  |
| 20 min | 11.2                       | 16.1  | 19.8  | 22.0  | 23.6  | 24.9  | 26.0  | 27.8  | 29.2  | 31.9  | 33.9  | 39.0  |
| 30 min | 13.2                       | 19.2  | 23.6  | 26.3  | 28.3  | 29.9  | 31.3  | 33.4  | 35.1  | 38.4  | 40.8  | 46.9  |
| 1 h    | 16.4                       | 23.0  | 28.0  | 31.0  | 33.2  | 34.9  | 36.4  | 38.8  | 40.7  | 44.2  | 46.9  | 53.6  |
| 2 h    | 19.7                       | 27.2  | 32.7  | 36.1  | 38.6  | 40.6  | 42.2  | 44.9  | 47.0  | 51.0  | 53.9  | 61.5  |
| 3 h    | 21.8                       | 30.0  | 36.1  | 39.8  | 42.5  | 44.6  | 46.4  | 49.3  | 51.6  | 55.9  | 59.1  | 67.3  |
| 6 h    | 26.4                       | 34.7  | 40.9  | 44.6  | 47.3  | 49.5  | 51.3  | 54.2  | 56.5  | 60.9  | 64.1  | 72.3  |
| 12 h   | 32.2                       | 42.2  | 49.6  | 54.0  | 57.2  | 59.8  | 61.9  | 65.4  | 68.1  | 73.3  | 77.1  | 86.8  |
| 1 j    | 39.6                       | 51.1  | 59.3  | 64.2  | 67.8  | 70.6  | 72.9  | 76.6  | 79.6  | 85.1  | 89.1  | 99.1  |
| 2 j    | 50.5                       | 64.4  | 74.2  | 79.9  | 84.0  | 87.2  | 89.8  | 94.0  | 97.3  | 103.5 | 107.9 | 118.9 |
| 3 j    | 54.0                       | 68.8  | 79.1  | 85.1  | 89.4  | 92.7  | 95.4  | 99.8  | 103.2 | 109.4 | 113.9 | 125.0 |
| 4 j    | 58.8                       | 74.7  | 85.6  | 91.8  | 96.3  | 99.8  | 102.6 | 107.1 | 110.6 | 117.1 | 121.7 | 133.0 |
| 5 j    | 66.7                       | 84.0  | 95.8  | 102.5 | 107.3 | 111.0 | 114.0 | 118.8 | 122.5 | 129.4 | 134.2 | 146.1 |
| 7 j    | 77.1                       | 95.8  | 108.4 | 115.5 | 120.6 | 124.5 | 127.7 | 132.7 | 136.6 | 143.8 | 148.8 | 161.1 |
| 10 j   | 91.9                       | 113.3 | 127.5 | 135.5 | 141.1 | 145.4 | 149.0 | 154.5 | 158.8 | 166.6 | 172.1 | 185.4 |
| 15 j   | 111.4                      | 136.3 | 152.6 | 161.7 | 168.1 | 173.0 | 176.9 | 183.1 | 187.9 | 196.6 | 202.7 | 217.2 |
| 20 j   | 129.8                      | 158.9 | 177.7 | 188.2 | 195.5 | 201.1 | 205.6 | 212.6 | 218.1 | 227.8 | 234.7 | 251.0 |
| 25 j   | 138.7                      | 169.6 | 189.5 | 200.5 | 208.1 | 213.9 | 218.6 | 226.0 | 231.6 | 241.7 | 248.8 | 265.5 |
| 30 j   | 161.7                      | 194.8 | 215.8 | 227.5 | 235.5 | 241.7 | 246.6 | 254.3 | 260.2 | 270.8 | 278.2 | 295.6 |

2. Niveau de retour estimé et écart-type de l'estimation pour une durée de précipitations de 10 minutes à 30 jours (lignes) et une période de retour de 2 à 200 années (colonnes). Unités : mm.

| Durée  | Période de retour (années) |       |       |       |       |       |       |       |       |       |       |       |
|--------|----------------------------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|
|        | 2                          | 5     | 10    | 15    | 20    | 25    | 30    | 40    | 50    | 75    | 100   | 200   |
| 10 min | 7.7                        | 11.1  | 13.6  | 15.1  | 16.2  | 17.1  | 17.9  | 19.1  | 20.1  | 21.9  | 23.3  | 26.8  |
|        | 0.2                        | 0.4   | 0.5   | 0.7   | 0.8   | 0.9   | 1.1   | 1.2   | 1.4   | 1.7   | 2.0   | 2.7   |
| 20 min | 11.2                       | 16.1  | 19.8  | 22.0  | 23.6  | 24.9  | 26.0  | 27.8  | 29.2  | 31.9  | 33.9  | 39.0  |
|        | 0.3                        | 0.6   | 0.8   | 1.0   | 1.2   | 1.4   | 1.5   | 1.8   | 2.0   | 2.4   | 2.8   | 3.8   |
| 30 min | 13.2                       | 19.2  | 23.6  | 26.3  | 28.3  | 29.9  | 31.3  | 33.4  | 35.1  | 38.4  | 40.8  | 46.9  |
|        | 0.4                        | 0.6   | 0.8   | 1.0   | 1.2   | 1.3   | 1.4   | 1.6   | 1.8   | 2.1   | 2.4   | 3.2   |
| 1 h    | 16.4                       | 23.0  | 28.0  | 31.0  | 33.2  | 34.9  | 36.4  | 38.8  | 40.7  | 44.2  | 46.9  | 53.6  |
|        | 0.5                        | 0.8   | 1.1   | 1.3   | 1.6   | 1.7   | 1.9   | 2.2   | 2.5   | 3.0   | 3.4   | 4.6   |
| 2 h    | 19.7                       | 27.2  | 32.7  | 36.1  | 38.6  | 40.6  | 42.2  | 44.9  | 47.0  | 51.0  | 53.9  | 61.5  |
|        | 0.6                        | 0.9   | 1.3   | 1.5   | 1.8   | 2.0   | 2.2   | 2.5   | 2.8   | 3.4   | 3.9   | 5.2   |
| 3 h    | 21.8                       | 30.0  | 36.1  | 39.8  | 42.5  | 44.6  | 46.4  | 49.3  | 51.6  | 55.9  | 59.1  | 67.3  |
|        | 0.7                        | 1.0   | 1.3   | 1.5   | 1.8   | 1.9   | 2.1   | 2.4   | 2.7   | 3.2   | 3.6   | 4.8   |
| 6 h    | 26.4                       | 34.7  | 40.9  | 44.6  | 47.3  | 49.5  | 51.3  | 54.2  | 56.5  | 60.9  | 64.1  | 72.3  |
|        | 0.8                        | 1.0   | 1.4   | 1.7   | 1.9   | 2.2   | 2.4   | 2.8   | 3.2   | 3.9   | 4.5   | 6.2   |
| 12 h   | 32.2                       | 42.2  | 49.6  | 54.0  | 57.2  | 59.8  | 61.9  | 65.4  | 68.1  | 73.3  | 77.1  | 86.8  |
|        | 1.1                        | 1.4   | 1.9   | 2.3   | 2.7   | 3.0   | 3.3   | 3.8   | 4.3   | 5.3   | 6.1   | 8.3   |
| 1 j    | 39.6                       | 51.1  | 59.3  | 64.2  | 67.8  | 70.6  | 72.9  | 76.6  | 79.6  | 85.1  | 89.1  | 99.1  |
|        | 1.2                        | 1.4   | 1.7   | 1.9   | 2.1   | 2.3   | 2.5   | 2.7   | 3.0   | 3.4   | 3.8   | 4.9   |
| 2 j    | 50.5                       | 64.4  | 74.2  | 79.9  | 84.0  | 87.2  | 89.8  | 94.0  | 97.3  | 103.5 | 107.9 | 118.9 |
|        | 1.8                        | 2.3   | 2.9   | 3.4   | 3.7   | 4.1   | 4.4   | 4.8   | 5.3   | 6.1   | 6.8   | 8.6   |
| 3 j    | 54.0                       | 68.8  | 79.1  | 85.1  | 89.4  | 92.7  | 95.4  | 99.8  | 103.2 | 109.4 | 113.9 | 125.0 |
|        | 2.2                        | 2.9   | 3.5   | 4.0   | 4.4   | 4.7   | 5.0   | 5.5   | 5.9   | 6.7   | 7.4   | 9.1   |
| 4 j    | 58.8                       | 74.7  | 85.6  | 91.8  | 96.3  | 99.8  | 102.6 | 107.1 | 110.6 | 117.1 | 121.7 | 133.0 |
|        | 2.6                        | 3.2   | 3.7   | 4.1   | 4.5   | 4.7   | 5.0   | 5.4   | 5.7   | 6.4   | 6.9   | 8.3   |
| 5 j    | 66.7                       | 84.0  | 95.8  | 102.5 | 107.3 | 111.0 | 114.0 | 118.8 | 122.5 | 129.4 | 134.2 | 146.1 |
|        | 3.0                        | 3.7   | 4.3   | 4.6   | 4.9   | 5.2   | 5.4   | 5.8   | 6.1   | 6.8   | 7.2   | 8.6   |
| 7 j    | 77.1                       | 95.8  | 108.4 | 115.5 | 120.6 | 124.5 | 127.7 | 132.7 | 136.6 | 143.8 | 148.8 | 161.1 |
|        | 3.6                        | 4.3   | 4.8   | 5.1   | 5.4   | 5.6   | 5.8   | 6.2   | 6.4   | 7.0   | 7.4   | 8.5   |
| 10 j   | 91.9                       | 113.3 | 127.5 | 135.5 | 141.1 | 145.4 | 149.0 | 154.5 | 158.8 | 166.6 | 172.1 | 185.4 |
|        | 4.5                        | 5.5   | 6.3   | 6.7   | 7.1   | 7.4   | 7.6   | 8.0   | 8.3   | 8.9   | 9.4   | 10.7  |
| 15 j   | 111.4                      | 136.3 | 152.6 | 161.7 | 168.1 | 173.0 | 176.9 | 183.1 | 187.9 | 196.6 | 202.7 | 217.2 |
|        | 5.5                        | 6.7   | 7.5   | 7.9   | 8.2   | 8.4   | 8.6   | 9.0   | 9.2   | 9.7   | 10.0  | 10.9  |
| 20 j   | 129.8                      | 158.9 | 177.7 | 188.2 | 195.5 | 201.1 | 205.6 | 212.6 | 218.1 | 227.8 | 234.7 | 251.0 |
|        | 6.5                        | 7.9   | 8.9   | 9.4   | 9.8   | 10.1  | 10.4  | 10.8  | 11.1  | 11.7  | 12.1  | 13.3  |
| 25 j   | 138.7                      | 169.6 | 189.5 | 200.5 | 208.1 | 213.9 | 218.6 | 226.0 | 231.6 | 241.7 | 248.8 | 265.5 |
|        | 7.3                        | 8.9   | 10.1  | 10.9  | 11.4  | 11.9  | 12.2  | 12.8  | 13.3  | 14.3  | 15.0  | 16.9  |
| 30 j   | 161.7                      | 194.8 | 215.8 | 227.5 | 235.5 | 241.7 | 246.6 | 254.3 | 260.2 | 270.8 | 278.2 | 295.6 |
|        | 8.0                        | 9.7   | 11.1  | 12.0  | 12.7  | 13.2  | 13.7  | 14.5  | 15.1  | 16.3  | 17.3  | 19.7  |

3. Intervalle de confiance à 95% de la période de retour estimée pour une durée de précipitations de 10 minutes à 30 jours (lignes) et une période de retour de 2 à 200 années (colonnes). Unités : mm.

| Durée  | Période de retour (années) |       |       |       |       |       |       |       |       |       |       |       |
|--------|----------------------------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|
|        | 2                          | 5     | 10    | 15    | 20    | 25    | 30    | 40    | 50    | 75    | 100   | 200   |
| 10 min | 7.3                        | 10.4  | 12.5  | 13.7  | 14.6  | 15.3  | 15.8  | 16.7  | 17.3  | 18.6  | 19.4  | 21.5  |
|        | 8.1                        | 11.8  | 14.6  | 16.5  | 17.9  | 19.0  | 19.9  | 21.5  | 22.8  | 25.3  | 27.2  | 32.2  |
| 20 min | 10.5                       | 15.0  | 18.1  | 19.9  | 21.2  | 22.2  | 23.0  | 24.3  | 25.3  | 27.1  | 28.4  | 31.5  |
|        | 11.9                       | 17.2  | 21.4  | 24.0  | 26.0  | 27.7  | 29.0  | 31.3  | 33.1  | 36.7  | 39.4  | 46.5  |
| 30 min | 12.4                       | 18.0  | 22.0  | 24.4  | 26.1  | 27.4  | 28.5  | 30.3  | 31.7  | 34.2  | 36.1  | 40.7  |
|        | 14.0                       | 20.4  | 25.3  | 28.3  | 30.6  | 32.4  | 34.0  | 36.5  | 38.6  | 42.5  | 45.5  | 53.2  |
| 1 h    | 15.4                       | 21.5  | 25.9  | 28.4  | 30.1  | 31.5  | 32.6  | 34.4  | 35.8  | 38.4  | 40.2  | 44.6  |
|        | 17.3                       | 24.5  | 30.1  | 33.6  | 36.2  | 38.3  | 40.1  | 43.1  | 45.5  | 50.1  | 53.6  | 62.7  |
| 2 h    | 18.5                       | 25.4  | 30.3  | 33.1  | 35.1  | 36.7  | 37.9  | 39.9  | 41.5  | 44.3  | 46.4  | 51.2  |
|        | 20.8                       | 28.9  | 35.2  | 39.1  | 42.1  | 44.5  | 46.5  | 49.8  | 52.5  | 57.6  | 61.5  | 71.7  |
| 3 h    | 20.5                       | 28.1  | 33.6  | 36.8  | 39.0  | 40.8  | 42.2  | 44.6  | 46.4  | 49.7  | 52.1  | 57.9  |
|        | 23.1                       | 31.9  | 38.6  | 42.8  | 45.9  | 48.4  | 50.6  | 54.0  | 56.8  | 62.2  | 66.2  | 76.7  |
| 6 h    | 24.8                       | 32.7  | 38.2  | 41.3  | 43.5  | 45.2  | 46.5  | 48.6  | 50.3  | 53.2  | 55.2  | 60.1  |
|        | 27.9                       | 36.7  | 43.5  | 47.9  | 51.1  | 53.8  | 56.1  | 59.8  | 62.8  | 68.6  | 73.0  | 84.6  |
| 12 h   | 30.1                       | 39.5  | 45.9  | 49.5  | 52.0  | 53.9  | 55.5  | 57.8  | 59.7  | 63.0  | 65.2  | 70.5  |
|        | 34.3                       | 44.9  | 53.2  | 58.5  | 62.5  | 65.7  | 68.4  | 72.9  | 76.6  | 83.6  | 89.0  | 103.0 |
| 1 j    | 37.2                       | 48.3  | 56.0  | 60.5  | 63.6  | 66.1  | 68.1  | 71.3  | 73.8  | 78.3  | 81.6  | 89.6  |
|        | 41.9                       | 53.8  | 62.7  | 68.0  | 72.0  | 75.1  | 77.7  | 82.0  | 85.4  | 91.8  | 96.6  | 108.7 |
| 2 j    | 47.0                       | 59.9  | 68.5  | 73.3  | 76.6  | 79.2  | 81.3  | 84.5  | 87.0  | 91.5  | 94.7  | 102.1 |
|        | 54.0                       | 68.9  | 79.9  | 86.5  | 91.3  | 95.2  | 98.4  | 103.5 | 107.7 | 115.4 | 121.1 | 135.7 |
| 3 j    | 49.6                       | 63.2  | 72.2  | 77.3  | 80.8  | 83.4  | 85.6  | 89.0  | 91.6  | 96.2  | 99.5  | 107.1 |
|        | 58.4                       | 74.5  | 86.1  | 93.0  | 98.0  | 102.0 | 105.3 | 110.5 | 114.7 | 122.6 | 128.3 | 142.8 |
| 4 j    | 53.7                       | 68.4  | 78.2  | 83.7  | 87.6  | 90.5  | 92.9  | 96.6  | 99.5  | 104.6 | 108.2 | 116.8 |
|        | 63.8                       | 80.9  | 92.9  | 100.0 | 105.0 | 109.0 | 112.3 | 117.6 | 121.8 | 129.5 | 135.2 | 149.3 |
| 5 j    | 60.9                       | 76.8  | 87.4  | 93.4  | 97.6  | 100.8 | 103.4 | 107.4 | 110.5 | 116.1 | 120.0 | 129.3 |
|        | 72.6                       | 91.2  | 104.1 | 111.6 | 117.0 | 121.2 | 124.6 | 130.2 | 134.5 | 142.6 | 148.4 | 163.0 |
| 7 j    | 70.0                       | 87.4  | 99.0  | 105.5 | 110.0 | 113.5 | 116.3 | 120.7 | 124.0 | 130.1 | 134.4 | 144.5 |
|        | 84.1                       | 104.1 | 117.8 | 125.6 | 131.2 | 135.6 | 139.1 | 144.8 | 149.2 | 157.4 | 163.3 | 177.7 |
| 10 j   | 83.1                       | 102.4 | 115.1 | 122.3 | 127.2 | 131.0 | 134.1 | 138.8 | 142.5 | 149.1 | 153.6 | 164.4 |
|        | 100.7                      | 124.1 | 139.8 | 148.7 | 155.0 | 159.9 | 163.9 | 170.2 | 175.1 | 184.1 | 190.6 | 206.4 |
| 15 j   | 100.6                      | 123.2 | 138.0 | 146.2 | 152.0 | 156.4 | 160.0 | 165.6 | 169.9 | 177.6 | 183.0 | 195.8 |
|        | 122.2                      | 149.4 | 167.2 | 177.2 | 184.2 | 189.5 | 193.9 | 200.7 | 206.0 | 215.5 | 222.3 | 238.6 |
| 20 j   | 117.1                      | 143.3 | 160.3 | 169.7 | 176.2 | 181.2 | 185.3 | 191.5 | 196.3 | 204.9 | 210.9 | 225.0 |
|        | 142.5                      | 174.4 | 195.2 | 206.7 | 214.7 | 220.9 | 225.9 | 233.7 | 239.8 | 250.7 | 258.4 | 277.0 |
| 25 j   | 124.5                      | 152.1 | 169.6 | 179.2 | 185.7 | 190.7 | 194.6 | 200.8 | 205.5 | 213.7 | 219.3 | 232.4 |
|        | 152.9                      | 187.1 | 209.3 | 221.8 | 230.5 | 237.1 | 242.6 | 251.1 | 257.7 | 269.7 | 278.2 | 298.7 |
| 30 j   | 146.1                      | 175.7 | 194.0 | 204.0 | 210.7 | 215.7 | 219.8 | 226.0 | 230.6 | 238.8 | 244.3 | 257.0 |
|        | 177.4                      | 213.9 | 237.6 | 251.0 | 260.4 | 267.6 | 273.4 | 282.7 | 289.8 | 302.8 | 312.0 | 334.2 |

#### 4. Estimation des coefficients de Montana.

Formule de Montana : intensité[mm/h] =  $a \cdot \text{durée}[\text{min}]^{-b}$  pour une plage de durées

$a_1, b_1$  : durées < 25 min

$a_2, b_2$  : durées entre 25 min et 6000 min (= 100 h)

$a_3, b_3$  : durées > 6000 min (= 100 h)

| Période de retour (années) | $a_1$ | $b_1$  | $a_2$  | $b_2$  | $a_3$ | $b_3$  |
|----------------------------|-------|--------|--------|--------|-------|--------|
| 2                          | 136.9 | 0.4708 | 299.7  | 0.7143 | 51.7  | 0.5123 |
| 5                          | 195.0 | 0.4680 | 466.7  | 0.7391 | 75.9  | 0.5304 |
| 10                         | 237.2 | 0.4642 | 600.8  | 0.7529 | 97.7  | 0.5441 |
| 15                         | 262.3 | 0.4616 | 685.9  | 0.7602 | 112.5 | 0.5523 |
| 20                         | 280.6 | 0.4596 | 750.0  | 0.7651 | 124.0 | 0.5582 |
| 25                         | 294.9 | 0.4580 | 802.1  | 0.7688 | 133.7 | 0.5628 |
| 30                         | 306.9 | 0.4566 | 846.2  | 0.7717 | 142.1 | 0.5666 |
| 40                         | 326.1 | 0.4544 | 918.9  | 0.7763 | 156.2 | 0.5726 |
| 50                         | 341.3 | 0.4526 | 978.1  | 0.7797 | 168.1 | 0.5773 |
| 75                         | 369.7 | 0.4493 | 1092.4 | 0.7859 | 191.8 | 0.5859 |
| 100                        | 390.5 | 0.4469 | 1179.1 | 0.7902 | 210.4 | 0.5921 |
| 200                        | 442.9 | 0.4408 | 1409.0 | 0.8003 | 262.5 | 0.6072 |

## Références

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